Magnetic Resonance in Rhombohedral Weak Ferromagnetics

83744
S/056/60/038/004/037/048
B006/B056

The theoretical results obtained are used for discussing the resonance properties of hematite; the theoretical and experimental results are compared, and very good agreement is found. The theoretically obtained dependence of $1/\lambda = \omega_1/2\pi c$ on the resonance field strength H lying in the direction of the lightest magnetization axis is shown in the Fig. on p. 1330. For comparison, the experimental data taken from Ref. 3 are given. The measured values are on the theoretical curve, with the exception of one value at $H \lesssim 2000$ oe, but in this case the condition of saturation magnetization is no longer satisfied. The authors thank S. V. Vonsovskiy for discussing the results obtained. A. S. [illegible]rovik-Romanov, L. D. Landau, Ye. M. Lifshits, M. I. Kaganov, V. [illegible] Tsukernik, and Yu. M. Seidov are mentioned. There are 1 figure and [illegible] references: 8 Soviet, 5 US, 2 French, and 1 Japanese.

ASSOCIATION: Institut fiziki metallov Akademii nauk [illegible]SR (Institute of Physics of Metals of the Academy [illegible] Sciences USSR)

SUBMITTED: November 23, 1959

Card 2/2

S/126/61/012/006/001/023
E032/E514

AUTHOR: Guseynov, N.G.

TITLE: High-frequency magnetic susceptibility of weak tetragonal and rhombohedral ferromagnetics

PERIODICAL: Fizika metallov i metallovedeniye v.12, no.6, 1961, 795-800

TEXT: The author reports a calculation of the resonance frequencies and the high-frequency magnetic susceptibility tensor for a weak tetragonal ferromagnetic with NiF_2 type structure. Anisotropy in the basic plane was taken into account. The form of the high-frequency susceptibility for a weak rhombohedral ferromagnetic with α-FeO_3 and $MnCO_3$ structure is also evaluated. The analysis is based on the thermodynamic potential reported by I.Ye.Dzyaloshinskiy (Ref.6: ZhETF, 1957, 32, 1547; 1957, 33, 1454). A formula is also derived for the width of the resonance line as a function of the direction of the external constant magnetic field and this formula is said to be in good agreement with the experimental results reported by M.J.Date (Ref.5: Phys.Soc. Japan, 1960, 15, 12, 2251) and A. S. Borovik-Romanov (Ref.13: All Union

Card 1/2

High-frequency magnetic ...

S/126/61/012/006/001/023
E032/E514

Conference on Low Temperature Physics, Kiev, 1961). Earlier work in this series was reported by Ye. A. Turov et al. (Ref.1: ZhETF, 1959, 36, 1254; Ref.2: Ibid, 1960, 38 1326, Ref.3: FMM, 1960, 9,10). Acknowledgments are expressed to Ye. A. Turov and V. Ye. Naysh for their assistance. There are 13 references: 11 Soviet-bloc and 2 non-Soviet-bloc. The English-language references read as follows: Ref.4: Moriya T. Phys Rev., 1960, 15 12, 2251; Ref.5: Quoted in text.

ASSOCIATION: Institut fiziki AN Azerb.SSR
(Institute of Physics AS Azerbaydzhan SSR)

SUBMITTED: June 3, 1961

Card 2/2

GUSEYNOV, N.G.

Spin waves in rhombic antiferromagnetic and weak ferromagnetic substances. Izv.AN Azerb.SSR.Ser.fiz.-mat.i tekh.nauk no.1: 55-64 '62. (MIRA 15:4)
(Ferromagnetism) (Quantum theory)

L 17487-63 EWT(l)/EWP(q)/EWT(m)/BDS/ES(s)-2 AFFTC/ASD/IJP(C)/SSD

ACCESSION NR: AP3004610 Pt-4 S/0233/63/000/002/0049/0051

64

AUTHOR: Guseynov, N. G.

TITLE: Peculiarities of Ni F sub 2 type crystals in magnetic aspects 21

SOURCE: AN AzerbSSR. Izv. Ser. fiziko-matem. i tekhn. nauk, no. 2, 1963, 49-51

TOPIC TAGS: NiF sub 2, magnetization, spontaneous magnetization

ABSTRACT: Author studied the results of spontaneous magnetization and the magnetic susceptibility of uniaxial crystals with the structure of the NiF_2 type as a function of temperature. This calculation makes the evaluation of the slit possible. The energy slit of the spinning waves were calculated from the energy spectra of the spinning waves. The presented formulas can differentiate from analogous expressions for crystals with structures of the type Alpha-Fe_2O_3 only by a coefficient. "The author expresses his gratitude to Yu. M. Seydov for the discussion of results." Orig. art. has: 4 formulas.

ASSOCIATION: none

SUBMITTED: CO	DATE ACQ: 15Aug63	ENCL: 00
SUB CODE: PH,CH	NO REF SOV: 002	OTHER: 000

Card 1/1

SEIDOV, Yu.M.; GUSEYNOV, N.G.

Spin wave spectrum and magnetic susceptibility of the $CuCl_2 \cdot 2H_2O$ compound. Izv. AN Azerb. SSR. Ser. fiz.-mat. i tekh. nauk no.5: 75-77 '63. (MIRA 17:3)

ACCESSION NR: AP4019849 S/0181/64/006/003/0852/0855

AUTHOR: Guseynov, N. G.

TITLE: Weak ferromagnetism in cubic crystals

SOURCE: Fizika tverdogo tela, v. 6, no. 3, 1964, 852-855

TOPIC TAGS: ferromagnetism, weak ferromagnetism, cubic crystal, antiferromagnetism, spin wave spectrum, magnetic moment, temperature dependence

ABSTRACT: Theoretical considerations are made of cubic crystals in which invariants of the fourth and higher orders in the spin Hamiltonian play an essential role in the magnetic properties of the crystal. In these the crystalline anisotropy is also determined by an invariant of the fourth order. The general phenomenological Hamiltonian of the cubic weak ferromagnetic is simplified by assuming the vector l lies in the (001) plane where $\mathbf{m}=\frac{1}{2M_0}(\mathbf{M}_1+\mathbf{M}_2)$, $\mathbf{l}=\frac{1}{2M_0}(\mathbf{M}_1-\mathbf{M}_2)$; $\mathbf{M}_1$ and $\mathbf{M}_2$ are the magnetizations of the sublattices for which it is assumed $M_1^2=M_2^2=\text{const}$ or $l^2+m^2=1, (\mathbf{ml})=0$. Minimizing the simplified Hamiltonian to find the possible equilibrium states indicates that with no external magnetic field

Card 1/2

ACCESSION NR: AP4019849

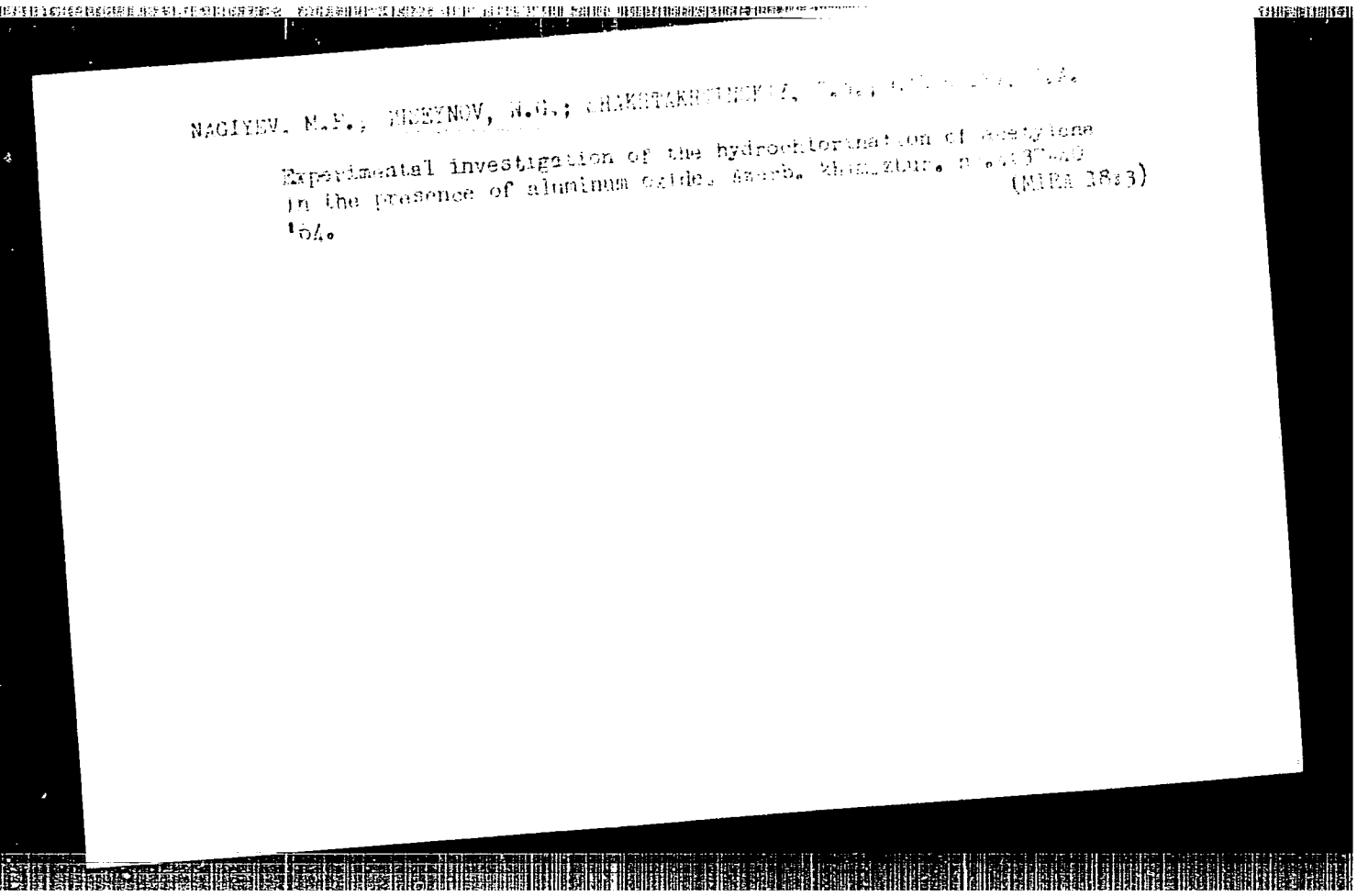
there is the possibility of two antiferromagnetic states for which $l \parallel [010]$; $l \parallel [100]$ and one weak ferromagnetic state for which $l \parallel [100]$. Conditions required for the existence of the states and the equilibrium values of the magnetic moments with an external magnetic field (the direction of which is assumed to lie in the (001) plane) are computed. Expressions for the frequencies of small vibrations of M_1 and M_2 about their equilibrium values show that for resonant absorption in such crystals electromagnetic radiation in the centimeter region is required. The temperature dependence of the magnetic moment is found for both the antiferromagnetic and weak ferromagnetic states. "The author thanks Ye. A. Turov and Yu. M. Seidov for discussion of the results of the work." Orig. art. has: 48 equations.

ASSOCIATION: Institut fiziki AN AzerbSSR, Baku (Institute of Physics, AN Azerb. SSR)

SUBMITTED: 010ct63 DATE ACQ: 31Mar64 ENCL: 00

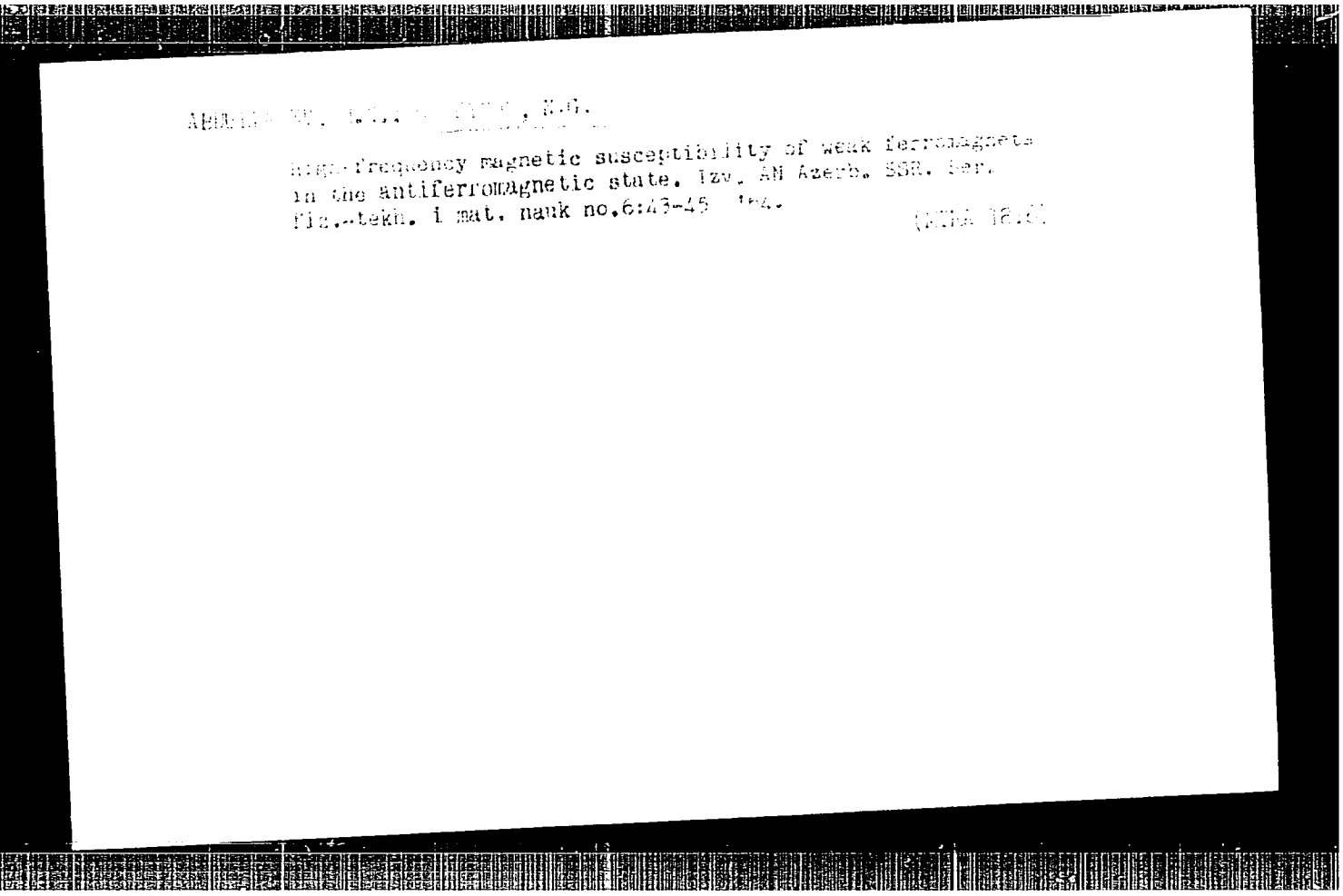
SUB CODE: PH NO REF SOV: 003 OTHER: 000

Card 2/2



NAGIYEV, M.F.; MUSAYNOV, N.D.; [illegible]

Experimental investigation of the hydrochlorination of acetylene in the presence of aluminum oxide. Azerb. khim.zhur. no.1:83-89 '64. (MIRA 18:3)



Abdullayev, K.M.

High-frequency magnetic susceptibility of weak ferromagnets in the antiferromagnetic state. Izv. AN Azerb. SSR. Ser. fiz.-tekh. i mat. nauk no.6:43-45 '64.

(MIRA 18:3)

NAG[illegible], [illegible]; [illegible], [illegible]; [illegible], [illegible]; SHAKHTAKHTINSKIY, T.N.

Experimental study of the dehydrochlorination of dichloroethane in order to obtain vinyl chloride in a reactor with a fluidized bed and ascending through-flow of a catalyst. Azerb. khim. zhur. no.3:44-50 '64. (MIRA 18:5)

L 2198-66 EWT(l)/EWT(m)/EPF(c)/T/EWP(t)/EWP(b) IJP(c) JD/JW/GO
UR/0181/65/007/006/1739/1742
ACCESSION NR: AP5014575

AUTHOR: Guseynov, N. G.; Abdullayev, M. N. 44,55 53 B 21,44,55

TITLE: Rotation of the plane of polarization in tetragonal crystals with MnF_2 type structure

SOURCE: Fizika tverdogo tela, v. 7, no. 6, 1965, 1739-1742

TOPIC TAGS: antiferromagnetism, ferromagnetism, spin system, crystal lattice structure

ABSTRACT: In view of the noticeable influence exerted by ferromagnetism on certain magnetic properties of such crystals even when they are in the antiferromagnetic state, the authors calculated the rotation of the plane of polarization in tetragonal crystals capable of exhibiting weak ferromagnetism, in which the principal axis of the crystal couples the spins of different magnetic sublattices. The calculations show that, in spite of the fact that the system is in a purely antiferromagnetic state, in the frequency range $\omega \ll \gamma H_d$ (ω — frequency, γ — magnetomechanical ratio, H_d — dM_0, d — parameter responsible for weak ferromagnetism, M_0 — magnetic moment) the rotation of the plane of polarization in these

Card 1/2

L 2198-66

ACCESSION NR: AP5014573

3

uniaxial crystals is due just to the weak ferromagnetism. Orig. art. has: 8 formulas.

ASSOCIATION: Institut fiziki AN AzSSR, Baku (Institute of Physics, AN AzSSR)

44,55

SUBMITTED: 23Dec64 ENCL: 00 SUB CODE: SS

NR REF SOV: 005 OTHER: 002

Card 2/2

L 11137-66 EWT(1)/EWT(m)/EPF(n)-2/EWA(d)/EWP(t)/EWP(z)/EWP(b)/ETC(m)-6 JD
ACC NR: AP6000867 SOURCE CODE: UR/0181/65/007/012/3635/3638

AUTHORS: Guseynov, N. G.; Seidov, Yu. M.

ORG: Institute of Physics AN AzSSR, Baku (Institut fiziki AN AzSSR)

TITLE: Contribution to the theory of thermal expansion in magnetically ordered crystals

SOURCE: Fizika tverdogo tela, v. 7, no. 12, 19 5, 3635-3638

TOPIC TAGS: thermal expansion, critical point, magnetic crystal, magnetic domain structure, antiferromagnetic material, spin wave

ABSTRACT: Inasmuch as knowledge of the effect of magnetic ordering on the thermal properties yields information concerning the dependence of the exchange integral on the interatomic distance and other data, the authors derive a general formula for the magnetic contribution to thermal expansion in magnetically-ordered media. The calculations pertain to crystals with structure of MnF_2. The standard Green's functions technique is employed. The formulas obtained are applicable

Card 1/2

L 14137-66
ACC NR: AP6000867

to magnets with tetragonal syngony in the entire temperature range where magnetic ordering exists. In particular, expressions for the spin-wave-induced thermal expansion in ferromagnetic and antiferromagnetic crystals are derived from the general formula. The thermal expansion coefficients of antiferromagnetic crystals in both the parallel and perpendicular directions have terms both linear and cubic in T at values above a certain critical temperature, and an exponential temperature dependence below this temperature. The critical temperature depends on the susceptibility and on the anisotropy coefficient. It is shown that the effect can be observed experimentally. Orig. art. has: 10 formulas.

SUB CODE: 20/ SUBM DATE: 26Mar65/ ORIG REF: 004/ OTH REF: 003

FW

Card 2/2

L 41577-65 EWT(m)/EPF(c)/EWP(j)/T Pc-4/Pr-4 RM
ACCESSION NR: AP5008838 S/0079/65/035/003/0461/0466

AUTHOR: Mamedov, M. A.; Akhmedov, I. M.; Guseynov, M. M.; Sadykh-zade, S. I.

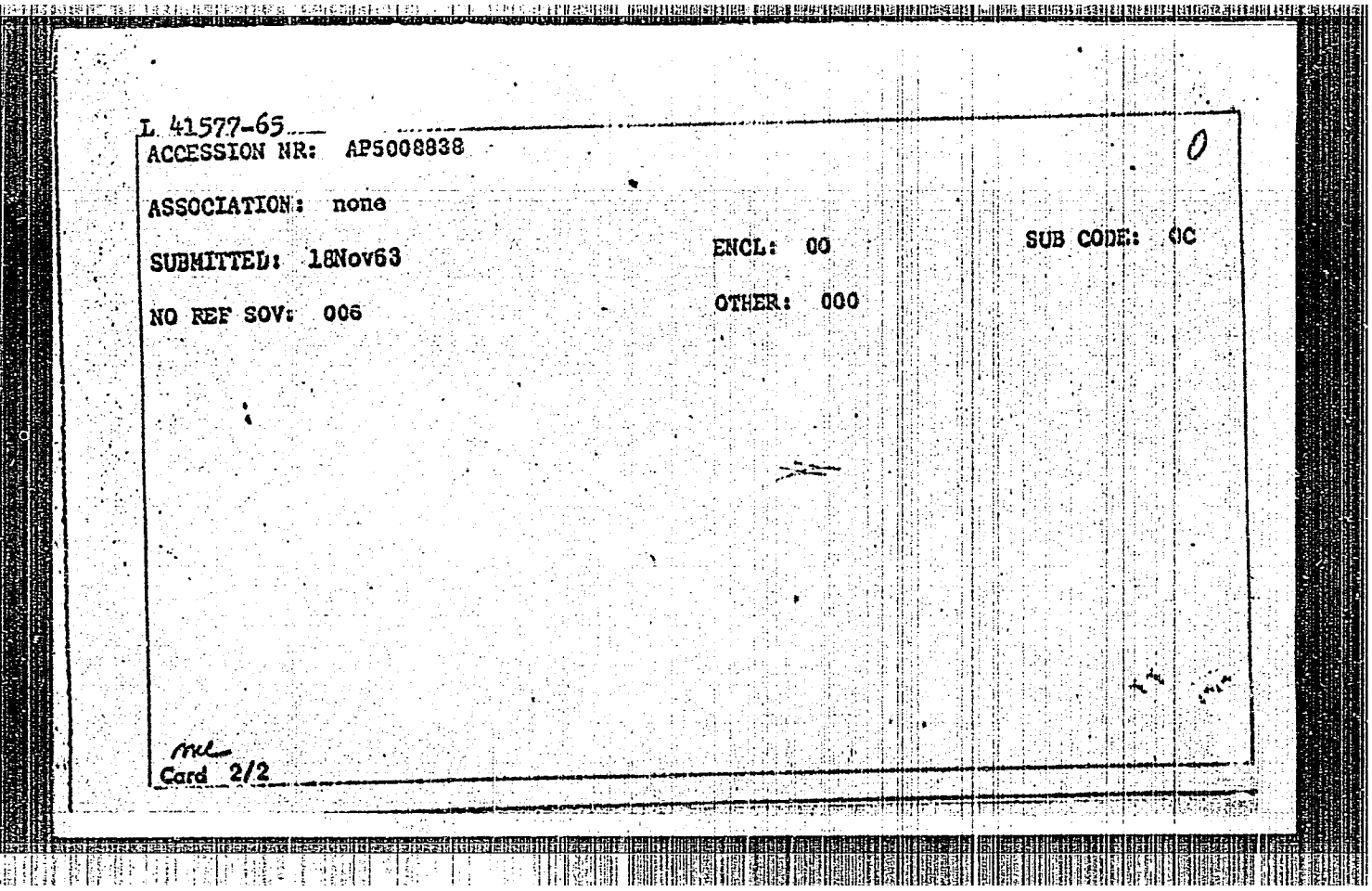
TITLE: Addition of silicon hydrides to dichloralkenes and alkynes

SOURCE: Zhurnal obshchey khimii, v. 35, no. 3, 1965, 461-466

TOPIC TAGS: silicon hydride, silicon organic compound, organic synthesis

ABSTRACT: In a previous work by these authors [Azerb. khim. zh., 6, 9 (1962)] it was shown that silicon hydrides are joined to chloroprene and isoprene in the presence of a 0.1 normal solution of chloroplatinic acid in isopropyl alcohol primarily in the 1,4 position. It was of interest to investigate alkynes of C_4 composition in the presence of this catalyst. The addition reactions of trialkyl-, alkyldichloro- and trichlorosilane being joined to 1,4-dichloro-2-butene, 3,4-dichloro-1-butene and 1,4-dichloro-2-butene in the presence of H_2PtCl_6 were studied. It was found that in the case of 3,4-dichloro-1-butene, silicon hydrides are joined exclusively according to the Farmer rule. The addition of silicon hydrides to 1,4-dichloro-2-butene results in the formation of anomalous reaction products. Silicon hydrides is joined to 1,4-dichloro-2-butyne at the triple bond. Orig. art. has: 4 figures and 1 table.

Card 1/2



L 41577-65

ACCESSION NR: AP5008838

0

ASSOCIATION: none

SUBMITTED: 18Nov63 ENCL: 00 SUB CODE: GC

NO REF SOV: 006 OTHER: 000

mcl

Card 2/2

MAMEDALIYEV, Yu.G., [deceased]; MAMEDALIYEV, G.M.; ALIYEV, S.M.; GUSEYNOV, N.I.

Dehydrogenation of alkyl aromatic hydrocarbons in a fluid-bed catalyst. Azerb. khim. zhur. no.3:11-18 '62. (MIRA 16:12)

MAMEDALIYEV, Yu.G.; MAMEDALIYEV, G.M.; ALIYEV, S.M.; GUSEYNOV, N.I.

Synthesis of cymenes by the alkylation of toluene with propylene over aluminosilicates. Azerb.khim.zhur. no.1:39-54 '61. (MIRA 14:8)

(Cymene) (Toluene) (Propene)

MAMEDALIYEV, Yu.G. [deceased]; MAMEDALIYEV, G.M.; ALIYEV, S.M.; GUSEYNOV, N.I.; GADZHIYEV, G.G.

Alkylation of toluene, xylenes, and trimethylbenzenes with olefins in the presence of synthetic aluminosilicates. Azerb. khim.zhur. no.2:3-9 '62. (MIRA 16:3)
(Benzene derivatives) (Alkylation) (Olefins)

MAMEDALIYEV, Yu.G. [deceased]; MAMEDALIYEV, G.M.; ALIYEV, S.M.; GUSEYNOV, N.I.

Preparation of nucleus-methylated styrenes, α-methylstyrenes, and vinyl-isopropenylbenzene by the heterogenous vapor-phase alkylation and dehydrogenation of aromatic hydrocarbons in a fluidized bed of oxide catalysts. Dokl. AN Azerb. SSR 19 no.1:13-18 '63. (MIRA 16:4)

1. Institut neftekhimicheskikh protsessov AN AzSSR.
(Benzene derivatives) (Styrene) (Hydrocarbons)

GUSEYNOV, N.I., inzh.

Method for increasing the reliability of the self-excitation of synchronous generators. Energetik 12 no.10:12-14 O '64.
(MIRA 17:11)

MAMEDALIYEV, Yu.G. [deceased]; ISMAYLOV, R.G.; MAMEDALIYEV, G.M.; ALIYEV, S.M.; GUSEYNOV, N.I.; AKHMED-ZADE, Z.A.

Dehydrogenation of alkyl aromatic hydrocarbons in a fluidized bed of various oxide catalysts. Dokl. AN Azerb. SSR 20 no.5: 7-10 '64. (MIRA 17:8)

1. Institut neftekhimicheskikh protsessov AN AzSSR imeni Yu.G.Mamedaliyeva.

ACC NR: AP6036052 SOURCE CODE: UR/0056/66/051/004/1084/1089

AUTHOR: Guseynov, N. G.; Seidov, Yu. M.

ORG: Institute of Physics, AN AzerSSR (Institut fiziki AN Azerbaydzhanskoy SSR)

TITLE: Magnetic impurity levels in antiferromagnetics

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 51, no. 4, 1966, 1084-1089

TOPIC TAGS: magnetic crystal, crystal impurity, impurity level, Green function, antiferromagnetism, antiferromagnetic crystal

ABSTRACT: The problem of local magnetic excitations in antiferromagnetic crystals with a single impurity center is considered. A general solution of the problem of oscillations of the spin system of an antiferromagnetic crystal containing an impurity magnetic atom is presented. It is shown that the Green function of such a crystal satisfies the Dyson equation and can be expressed in terms of the Green function of a perfect crystal. Some of these local levels may be smaller than the spin wave gap in antiferromagnetics. Orig. art. has: 16 formulas. [Authors' abstract]

[AM]

Card 1/1 SUB CODE: 20/SUBM DATE: 07Feb66/ORIG REF: 004/OTH REF: 002/

124-1957-2-1526

Translation from Referativnyy zhurnal. Mekhanika, 1957, Nr 2, p 12 (USSR)

AUTHOR: Guseynov, N. M.

TITLE On a Problem in the Engineering Design of Four-Bar-Linkage Mechanisms (Ob odnoy zadache sinteza chetyrekhzvennykh mekhanizmov) Summary in Azerbaydzhan

PERIODICAL: Tr Azerb. s.-kh. in-ta, 1955, Nr 4, pp 95-100

ABSTRACT: The article is devoted to a description of the method by S.A. Cherkudinov (Tr. Seminara po teorii mashin i mekhanizmov In-ta mashinoved AN SSSR, 1947, Vol 3, Nr 9) as applied to mechanisms effecting the motion of the sieves used for cleaning the grain in combines.

I.I.Artobolevskiy

1. Mechanical drives--Design 2. Cereals--Cleaning

Card 1/1

SOV/124-58-7-8198

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 7, p 122 (USSR)

AUTHOR: Guseynov, N.M.

TITLE: The Actual Degree of Nonuniformity in the Rotation of a Crankshaft When Allowance is Made for Torsional Vibrations (Deystvitel'naya stepen' neravnomernosti vrashcheniya krivoshipnogo vala s uchetom krutil'nykh kolebaniy)

PERIODICAL: Tr. Azerb. s.-kh. in-ta, 1957, Vol 5, pp 91-92

ABSTRACT: Bibliographic entry

1. Crankshafts--Vibration

Card 1/1

GUSEYNOV, N.M., doktor tekhn.nauk, prof.; ZAKARYAN, M.R., kand.tekhn.nauk

Problems in the mechanization of agriculture in mountain areas.
Trakt. i sel'khozmash. 33 no.2:28-29 F '63. (MIRA 16:3)
(Agricultural machinery)

ISKENDEROV, I.A.; [illegible]

Determining the ballasting for underwater pipelines. Stroi. truboprov. 9 no.5:16-17 My '64. (MIRA 17:9)

1. Gosudarstvennyy institut po proyektirovaniyu predpriyatiy dlya dobychi nefti s morskogo dna, Baku.

GUSEYNOV, N.N., kand. med. nauk, mayor meditsinskoy sluzhby

Objective determination of visual acuity. Voen. med. zhur. no.10:67-70 O '65. (MIRA 18:11)

GUSEYNOV, O.Kh.

Stability of a single geom. lav. AN Azerb. SSR. Ser. fiz.-tekh. i mat. nauk no.1:109-113 '64. (MIRA 17:9)

AMINOV, T.A.; GURBATOV, O.Kh.

The Schwarzschild singularity. Izv. AN Azerb.SSR.Ser.fiz.-tekh. i mat. nauk no.4:115-119 '64. (MIRA 18:3)

ZEL'DOVICH, Ya.B., akademik; GUSEYNOV, O.Kh.

Neutronization of matter on collapse and the neutrino spectrum.
Dokl. AN SSSR 162 no.4:791-793 Je '65. (MIRA 18:5)

GUSEYNOV, O.Kh.

Contraction of time and the mass defect. Uch. zap. AGU. Ser. fiz.-mat. nauk no.4:95-96 '63. (MIRA 17:12)

L 65205-65 EWT(1)/EWT(m)/T/EWA(m)-2 GW

ACCESSION NR: AP5014222 UR/0386/65/001/004/0011/0017 4/5 3

AUTHOR: Zel'dovich, Ya. B.; Guseynov, O. Kh.

TITLE: He^4 neutronization

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 1, no. 4, 1965, 11-17

TOPIC TAGS: star, neutrino, particle production, high energy particle

ABSTRACT: The neutronization reaction begins in matter at high densities when electron energy becomes sufficient for the reverse ß-process. During collapse of a star, high energy neutrinos may be emitted as a consequence of neutronization of matter. It may be possible to detect these neutrinos. The authors attempt to determine the energy of neutrinos which are formed during neutronization of helium. It is found that during the process $e^- + T = 3n + \nu$, neutrinos with energies up to 35 Mev are created. The probability of recording these neutrinos is 10-20 times greater than that for recording threshold neutrinos from decay of B^8, which it is hoped will be observed in the solar spectrum. These neutrinos may be distinguished

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L 65205-65

ACCESSION NR: AP5014222

from solar neutrinos if the detector records the energy of the neutrinos and their direction, even if only roughly. For the great majority of stars, the energetic neutrinos produced by neutronization will be able to leave the star without any noticeable attenuation by the gravitational field. Orig. art. has: 7 formulas.

ASSOCIATION: none

SUBMITTED: 06Apr65 ENCL: 00 SUB CODE: NP, AA

NO REF SOV: 007 OTHER: 003

Card 2/2

L 2892-66 EWT(1)/EEC(k)-2 GW

ACCESSION NR: AP5015417 UR/0020/65/162/004/0791/0793

AUTHORS: Zel'dovich, Ya. B. (Academician); Guseynov, O. Kh.

TITLE: Neutronization of matter during collapse, and the neutrino spectrum

SOURCE: AN SSSR. Doklady, v. 162, no. 4, 1965, 791-793

TOPIC TAGS: neutrino, neutron reaction, cosmogony, stellar evolution

ABSTRACT: The authors consider the last stage of stellar evolution, consisting of the transformation of all the stable nuclei in the star into neutrons and emission of high-energy neutrinos, which, unlike the thermal neutrinos and antineutrinos, can be measured in experiments and thus give information on the course of the stellar evolution. It is shown by an approximate calculation, using the neutronization of cold hydrogen under free-fall collapse as an example, that the emitted neutrino will have an average energy 4.56 MeV and that the neutron production will occur in approximately 10^{-2} sec. In the case

Card 1/2

L 2892-66

ACCESSION NR: AP5015417

of neutronization of a helium star, the neutrino energy is of the order of 10 MeV. Neutronization of heavier stars (iron) can raise the neutrino energy to as much as 30 MeV. It is further estimated that the flux of the high-energy neutrinos, assuming that 5--10 stars with masses 2--3 times that of the sun collapse in the galaxy every year, can become comparable with the flux of solar neutrinos, and in view of recent improvements in detection techniques, these may become observable, provided the spectrum of the neutrinos from the collapsing stars contains neutrinos which are not contained in the solar neutrino spectrum. Orig. art. has: 7 formulas

ASSOCIATION: None

SUBMITTED: 12Mar64 ENCL: 00 SUB CODE: AA

NR REF SOV: 003 OTHER: 001

Card 2/2

L 17547-66 EWT(1) GW
ACC NR: AP6003826 SOURCE CODE: UR/0386/65/002/003/0113/0116

22
19
B

AUTHORS: Gurovich, V. Ts.; Guseynov, O. Kh.

ORG: none

TITLE: Rotation of superdense configurations

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 2, no. 3, 1965, 113-116

TOPIC TAGS: cosmology, star, stellar evolution

ABSTRACT: The authors examine the influence of rotation on the parameters of statistically superdense stars with average density greater than 10^{12} g/cm^3 (limiting mass M = 1.55 solar masses and radius R = 8.92 km). The configuration parameters are estimated, in view of the computational difficulties involved in the use of Newton's or Einstein's theory, for the following simplified model: it is assumed that the star rotation to be such that deviation from sphericity of the hyperon core, which has 0.93 -- 0.97 of the mass of the

2

Card 1/2

L 17547-66

ACC NR: AP6003826

entire configuration, can be neglected. Under this assumption the shell of the hyperon star rotates in an external gravitational field produced by a spherically-symmetrical rotating core. Calculations show that the rotation of the configuration core leads to the appearance of a new force which partially offsets the centrifugal force. This leads to an increase in the deformation of the configuration if the core and the shell rotate in opposite directions. The shell deformation is found to be 0.127 and 0.176 on the pole and on the equator, respectively, if the configuration core rotates, and 0.254 on the equator if the core does not rotate. Author thanks A. G. Doroshkevich, Ya. B. Zel'dovich, and I. D. Novikov for a discussion of the results. Orig. art. has: 5 formulas.

SUB CODE: 03 SUBM DATE: 03Jun65/ ORIG REF: 004/

Card 2/2

L 42148-66 EWT(1)/EWT(m)/T GW

ACC NR: AP6028792 SOURCE CODE: UR/0033/66/043/004/0772/0778

AUTHOR: Guseynov, O. Kh.

ORG: Shemakha Astrophysical Observatory, Academy of Sciences AzerbSSR (Shemakhinskaya astrofizicheskaya observatoriya Akademii nauk AzerbSSR)

TITLE: Experimental possibilities of observing cosmic neutrinos

SOURCE: Astronomicheskiy zhurnal, v. 43, no. 4, 1966, 772-778

TOPIC TAGS: cosmic ~~neutrino~~ radiation, neutrino, astronomy, star, ~~collapse, gravitational collapse theory~~, antineutrino, ~~high energy cosmic particle~~

ABSTRACT: The possibilities of observing the high-energy neutrinos emitted during the collapse of a star against the background of solar and cosmic secondary neutrinos are discussed. The concept of star collapse includes both the case in which a star is transformed into a neutron star having a radius of the order of 10 km as well as the case of relativistic collapse with an asymptotic approximation of the Schwarzschild radius. It is shown that the rapid contraction of a star is accompanied by the emission of high-energy (~50 Mev) neutrinos and antineutrinos. Star collapse and its concomitant phenomena are believed to occur when the mass of a star exceeds 1.2 M. Thus, there must be between 5 and 10 instances of star collapse a year in the Galaxy. The expected flux ν and $\bar{\nu}$ at the earth due to star collapse is estimated at

Card 1/2 UDC: 523.035.25

L 42148-66

ACC NR: AP6028792

5

$\sim 10^{13}$—10^{15} v, $\tilde{v}$/cm^2 sec. The author thanks Ya. B. Zel'dovich, G. V. Domogatskiy, G. T. Zatsepin, V. A. Kuz'min, and A. Ye. Chudakov. Orig. art. has: 17 formulas. [DM]

SUB CODE: 03/ SUBM DATE: 03Dec65/ ORIG REF: 011/ OTH REF: 004/ ATD PRESS: 5062

Card 2/2 nlcp

ABDULLAYEV, M. M.; GUSEYNOV, O.M.

Modified dry sterile thrombin of the Azerbaijan Blood Transfusion Institute and its use in clinical otorhinolaryngology. Azerb. med. zhur. no.1:17-20 Ja '62. (MIRA 16:5)

1. Iz Azerbaydzhanskogo nauchno-issledovatel'skogo instituta perelivaniya krovi (direktor-dotsent G.A. Guseynov) i kliniki otolaringologii (zav.-dotsent A.O. Shikhlinskiy).
(THROMBIN) (OTORHINOLARYNGOLOGY)

GUSEYNOV, O.M., aspirant

State of the blood coagulation and anticoagulation system in patients with chronic tonsillitis. Azerb. med. zhur. 41 no. 10: 65-70 O '64 (MIRA 19:1)

1. Iz kafedry bolezney ukha, gorla, nosa (zav. - dotsent A.O. Shikhlinskiy) i kafedry gospital'noy terapii (zav. - chlen-korrespondent AN Azerbaydzhanskoy SSR, prof. D.M. Abdulayev) Azerbaydzhanskogo gosudarstvennogo meditsinskogo instituta imeni Narimanova.

GUSEYNOV, R.

"Increasing Productivity of Silk-Worm Breeding in the Republic"

By 1960 it is planned to double the productivity of cocoons. The author mentions the 18-23 September Conference of the Silk-Worm Section of the All-Union Academy of Agricultural Sciences in Samarkand, of which a brief report is given. A survey of progress in silk-worm breeding follows and it is indicated that a new form of silk worm will be cultivated in 1951.

Babinskiy Rabochiy, 2 Nove 1951.
JIB 215, p22

G-USEYNOV, R.

AUTHOR :
CATEGORY : Cultivated Plants. Commercial. Oleiferous. Sugar-Bearing.
ABS. JOUR. : RZhBiol., No. 4, 1959, No.15733

AUTHOR : Guseynov, R.
INST. : AS Azerbaydzhan SSR
TITLE : Experiments in Placement of Superphosphate under Cotton Seed.

ORIG. PUB. : Chlopkovodstvo, 1958, No.4, 40-42

ABSTRACT : Findings of field experiments conducted in 1951-1957 by the soil science and agricultural chemistry institute of the Academy of Sciences Azerbaydzhan SSR in kolkhozy and base stations of the main beet sowing rayons of the republic on the problem of the methods of placing phosphorus fertilizers simultaneously with seeds. It was determined that the method most effective was presowing placement of P_0 in rows with imbedding 8 to 10 cm below seed bed, as compared with the usual placement with rows and beside row. -- B.I. Klyachko-Gurvich

CARD: 1/1

[The people of Masally District keep their word; work practices of the workers of collective farms in Masally District in the fulfillment of socialist obligations assumed in honor of the 22d Congress of the CPSU]Masallintsy derzhat slovo; ob opyte raboty truzhenikov kolkhozov Masallinskogo raiona po vypolneniiu sotsialisticheskikh obiazatel'stv, priniatykh v chest' XXII s"ezda KPSS. Baku, Azerbaidzhanskoe gos. izd-vo, 1961. 44 p. (MIRA 15:12)
(Masally District--Agriculture--Economic aspects)

Q-2

USSR / Farm Animals. Cattle.

Abs Jour : Ref Zhur - Biol., No 14, 1958, No 64417

Author : Rzayev, E. A.; Nadzhafov, N. A.; Guseynov, R. A.
Inst : Not given
Title : The Milkiness and Fat Content in the Milk of the Zebu Cattle of Azerbaydzhan.

Orig Pub : Zhivotnovodatvo, 1957, No 8, 76-77

Abstract : Under extensive conditions of individual farming, the Azerbaydzhan Zebu produced an average of 470 liters of milk, with a fat content of 4.15%. The experiments carried out in 5 kolkhozes showed that with the improvement of feeding without concentrates (supplementation of feeding during the autumn-winter period by hay, rice, straw and corn silage, and in the summer by grass and vegetable waste), the milk production of the Azerbaydzhan Zebu considerably increased. In 1954, 80 Zebu cows produced an average of 514 kg. each;

Card 1/2

GUSEYNOV, R.A.

Variations in the productivity and some physiological indices of the Azerbaijanian zebu in relation to environmental conditions. Trudy Sekt. fiziol. AN Azerb. SSR 3:109-116 '60. (MIRA 13:10)
(AZERBAIJAN--ZEBUS)

DADASHEV, F.G.; GUSEYNOV, R.A.

Changes in the hydrocarbon composition of casinghead gas in the Neftechala petroleum field. Azerb. neft. khoz. 41 no.6:7-9 Je '62. (MIRA 16:1)

(Neftechala region--Hydrocarbons)

GUSEYNOV, M.A.

Correlation of morphological indices of the blood with the milk productivity and butterfat in zebu cows in Azerbaijan. Vop. fiziol. 6:144-155 '63. (MIRA 17:11)

GUSEYNOV, R.A.

Role and importance of Syrian sources for studying the history of the nations of the Caucasus. Dokl. AN Azerb. SSR 18 no.7: 71-75 '63. (MIRA 17:2)

1. Institut istorii AN AzSSR. Predstavleno akademikom AN AzSSR A.A. Alizade.

S/035/60/000/04/06/017
A001/A001

Translation from: Referativnyy zhurnal, Astronomiya i Geodeziya, 1960, No. 4, p. 42, # 3168

AUTHORS: Guseynov, R. E., Musayev, M. M.

TITLE: An Observation of a Flare on March 3, 1958

PERIODICAL: Solnechnyye dannyye, 1959, No. 1, pp. 79-80

TEXT: The flare of March 3, 1958, was observed by the chromospheric tube of a chromospheric-photospheric telescope at the Mountainous station of the Sektor astrofiziki (Astrophysical Branch) of AS Azerbaydzhan SSR. The flare was originated in the region of a large active zone. The coordinates of the flare center are as follows: $\varphi = -19^{\circ}$, $\lambda = 61^{\circ}$E. The intensity of the maximum brightness area amounted to 3.57 intensity of the surrounding background or 1.43 in terms of the units of continuous spectrum intensity. The brightness of the flare, after a rapid increase, declined comparatively slow.

R. B. T.

Card 1/1

81760
S/035/60/000/02/02/009

3.1800

Translation from: Referativnyy zhurnal, Astronomiya i Geodeziya, 1960, No 2, pp. 42-43, # 1390

AUTHOR: Guseynov, R. E.

TITLE: Some Observational Data on Radio-Frequency Radiation of the Sun and Their Interpretation. Theoretical Relationship Between the Height Above the Photosphere and the Relative Intensity of Radiobursts

PERIODICAL: Tr. Sektora astrofiz. AN AzerbSSR, 1959, Vol. 1, pp. 53-70 (Azerb. summary)

TEXT: The author concludes, on the basis of observations of Laffiner et al., that associations of sunspots with bursts depends strongly on the intensity of the spot magnetic field: The higher the intensity, the more probable the occurrence of a burst. The number of bursts of solar sporadic radio-frequency radiation increases with an increase in the number of the observed chromospheric flashes. In periods of high solar activity, a close connection is detected between radio-frequency radiation at 1-m wavelength and eruptive prominences. It is presumed that chromospheric flashes are a direct cause of solar sporadic radio-radiation.

Card 1/2

81760
S/035/60/000/02/02/009

Some Observational Data on Radio-Frequency Radiation of the Sun and Their Interpretation. Theoretical Relationship Between the Height Above the Photosphere and the Relative Intensity of Radiobursts

Since relativistic electrons are supposed to be the source of this radiation, the author suggests an approach to the study of chromospheric flash nature from the theory of "luminous" electron. The author holds that it will be possible to explain not only sporadic radiation but also chromospheric flashes and other phenomena (intensity increase of the cosmic ray primary component, X-ray quanta) by varying correspondingly the values of relativistic electron energies and magnetic field intensities. He considers the theoretical relationship between the height above the photosphere and the relative intensity of radiobursts. He assumes that the radio-frequency radiation of the Sun as a whole and its individual regions obeys the law of ideal blackbody radiation, and that the "luminous" electron theory is applicable. It is shown that the agent inducing bursts moves upwards at a certain speed; when it reaches a layer where $a_r < 1$ for the given wavelength, a "radioburst" of a definite intensity is originated (a_r is absorption capacity of the layer). There are 6 references.

G. M. Tovmasyan

Card 2/2

GUSEYNOV, R.E.

Visual observations of artificial earth satellites at the astronomical observatory of the Azerbaijan State University [in Azerbainani with summery in Russian]. Uch. zap. AGU. Fiz.-mat. i khim. ser. no.3:43-53 '59. (MIRA 14:3)
(Artificial satellites---Tracking)

GUSEYNOV, R.E.

Equation for determining the distribution function of optical layers and original intensities of solar bursts. Dokl.AN Azer SSR 15 no.12:1103-1105 '59. (MIRA 13:4)

1. Sektor astrofiziki AN AzerSSR. Predstavleno akademikom AN SSSR V.A.Ambartsumyanom.
(Sun)

GUSEYNOV, R.E.; GUSEYNOV, M.Dzh.; GASANALIZADE, A.G.; GUSEYNOV, K.I. MELIKOV, G.O.; AVAKOVA, L.M.

Data on chromosphere flares observed at the astronomical station of the Astrophysics Sector Academy of Sciences of the Azerbaijan S.S.R. during the International Geophysical Year and International Geophysical Co-operation in 1959. Izv. AN Azerb. SSR Ser. fiz.-mat. i tekh. nauk no.3:143-149 '60. (MIRA 13:11)

(Sun--Prominences)

GUSEYNOV, R.E.

Chromospheric flare of March 29, 1960, and its relation to a group of sunspots. Izv.AN Azerb.SSR.Ser.fiz.-mat.i tekh.nauk no.5:137-141 '60.

(MIRA 14:4)

(Sunspots)

S/035/61/000/010/015/034
A001/A101

3,1540

AUTHORS: Guseynov, R.E., Gasanalizade, A.G., Melikov, G.O., Guseynov, K.I.

TITLE: The chromospheric flare of June 1, 1960

PERIODICAL: Referativnyy zhurnal. Astronomiya i Geodeziya, no. 10, 1961, 56, abstract 10A406 ("Solnechnyye dannyye", 1960, no. 7, 74 - 77)

TEXT: The authors describe the specific features in development of the flare, intensity 3, which was observed over the active group of sunspots. They present the curves of variations of brightness and areas of 4 brightest knots of the flare.

[Abstracter's note: Complete translation]

VB

Card 1/1

S/035/61/000/011/017/028
A001/A101

AUTHORS: Guseynov, R. E., Gasanalizade, A. G.

TITLE: On a chromospheric flare in which movement was detected

PERIODICAL: Referativnyy zhurnal. Astronomiya i Geodeziya, no. 11, 1961, 59, abstract 11A426 ("Solnechnyye dannyye", 1960 (1961), no. 9, 75 - 78)

TEXT: On June 19, 1960, a chromospheric flare was observed in Hα line at an altitude of 15,390 km above the solar edge at the Shemakha Astrophysical Observatory, AS Azerbaidzhan SSR, by means of an interference-polarization filter with passband 0.5 A. The authors present a spectroheliogram of this flare region near the brightness maximum and the results of measurements at various instants of development of brightness, area and height of the flare. The changes in all three quantities proceed synchronously, which testifies to the existence of an actual movement of the substance in the flare. The average speed of flare rising was 13 km/sec.

B. Ioshpa

[Abstracter's note: Complete translation]

Card 1/1

30812
S/033/61/038/005/006/015
E032/E414

3,1540 (1559)

AUTHOR: Guseynov, R.E.

TITLE: On the possible application of the theory of strong explosions to chromospheric flares

PERIODICAL: Astronomicheskiy zhurnal, v.38, no.5, 1961, 869-876

TEXT: On June 19, 1960 at 10 hrs 26 min UT, the Shemakha Astrophysical Observatory observed a chromospheric flare of importance 1+ with the aid of the chromospheric tube of the chromospheric-photospheric telescope АФР-2 (AFR-2). The observations were carried out in H_α light through an interference-polarization filter with a transmission band of 0.5 A. Fig.1a and 1b show the relative intensity I and the height of the flare h above the photosphere as functions of time t. These figures show the surprising synchronous behaviour of the functions I(t) and h(t). Although this flare appeared on the eastern limb of the disk ($\varphi = +22°$), where the projected effect is important, nevertheless measurements of the area and height of the flare should throw light on the variation of these quantities with time. The total energy of the flare observed in the H_α light is estimated as 5×10^{26} erg. An estimate is also given of the

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On the possible application ...

energy released in the flare in L_α of hydrogen, λ304 Å HeII and the X-ray and continuous spectra. The total energy in these lines (including lines between λ3300 and 11500 Å) is estimated to be of the order of 10^{28} erg. This figure must be increased by several orders of magnitude in order to account for the cosmic ray emission of the flare. It is therefore concluded that if the flare phenomena are the result of a strong explosion, then the kinetic energy of the explosion is insufficient to compensate for the energy emitted by the flare in all forms of radiation. Therefore, the total energy released as a result of the explosion should considerably exceed the kinetic energy of the shock waves. Throughout this paper L.I.Sedov's theory of explosions is used (Ref.1: GITTL, 1957, Similarity and Dimensional Methods in Mechanics). An estimate is made of the temperature of the flare for values of the area of the flare S and its height above the limb h corresponding to the time during which the dimensions of the region traversed by the shock wave become equal to S (and h) for the above kinetic energy release. This temperature is found to be 8×10^5°K. However, if it is assumed that the explosion occurs practically instantaneously and is localized in a small

On the possible application ...

region, then the temperature of the core of the flare turns out to be much greater than 8 x 10^5°K. This is in good agreement with rocket data. It is therefore concluded that as far as temperature is concerned, the theory of strong explosions may be used to explain the phenomenon of flares. Finally, the kinetic energy density associated with the shock wave is estimated and found to be 2000 erg/cm^3, which is in good agreement with A.B.Severnyy's calculations (Ref.11: Izv. Krymsk. astrofiz. observ., v.19, 1958). The latter calculations are based on the study of the excitation and ionization of hydrogen in chromospheric flares and studies of the continuous non-stationary emission of flares, "whiskers" and the pinch effect. V.A.Ambartsumyan, E.R.Mustel' and A.B.Severnyy are mentioned in the article for their contributions in this field. There are 2 figures, 1 table and 16 references: 15 Soviet-bloc and 1 Russian translation from non-Soviet publication which reads as follows: Ref.7: The Sun, edited by G.P.Kuiper, 1953. Russian translation IIL, 1957.

ASSOCIATION: Shemakhinskaya astrofizicheskaya observatoriya Akademii nauk AzSSR (Shemakha Astrophysical Observatory, AS Azerbaydzhanskaya SSR)

Card 3/4

30818 S/033/61/038/005/006/015
E032/E414

On the possible application ...

SUBMITTED: December 24, 1960

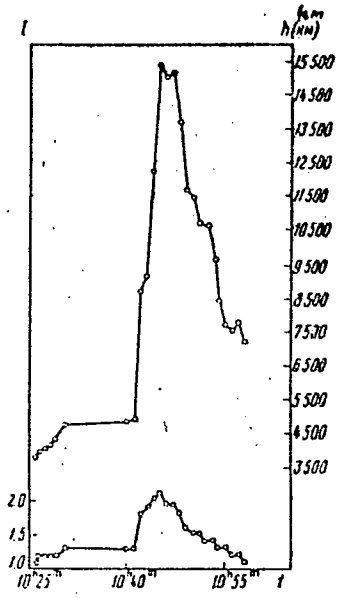

Fig.1a

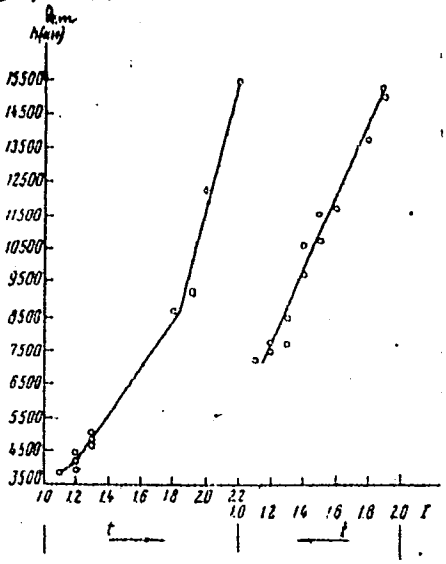

Fig.1b.

S/035/62/000/001/009/038
A001/A101

AUTHOR: Guseynov, R. E.

TITLE: On chromospheric flares emerging in the same region

PERIODICAL: Referativnyy zhurnal. Astronomiya i Geodeziya, no. 1, 1962, 57 abstract 1A434 ("Solnechnyye dannyye", 1960 (1961), no. 10, 66-69)

TEXT: The curves of variation of brightness and area were analyzed for 6 chromospheric flares whose development was filmed with a chromospheric telescope of the Shemakha Astrophysical Observatory. It follows from the analysis that changes in the area of flares proceed, as a rule, simultaneously with changes in their brightness. Deviations from this regularity may happen to either side by 4-5 min. Changes in the area and brightness of different knots of the same flare may occur both in the same way and differently. The magnitude of flare fluctuations depends on its brightness.

M. Gnevyshev

[Abstracter's note: Complete translation]

Card 1/1

S/035/62/000/008/027/090
A001/A101

AUTHORS: Guseynov, R. E., Avakova, L. M., Guseynov, K. I.

TITLE: The chromospheric flare of October 29, 1960

PERIODICAL: Referativnyy zhurnal, Astronomiya i Geodeziya, no. 8, 1962, 63, abstract 8A414 ("Solnechnyye dannyye", 1961, no. 5, 59 - 62)

TEXT: A characteristic feature of the flare observed at the Shemakha Observatory with a АФР-2 (AFR-2) telescope is the presence of several centers emerged in the region of a bright flocullus. The authors plotted the curves of brightness development and area of three main knots of the flare, as well as the brightest detail of the flocullus. Variations of brightness and knot area are noted to have a pulsation nature. The maximum brightness sets in after two comparatively low maxima. The rate of brightness increase is the highest near the first maximum. This characterizes also the variation of the knot area. Area maxima lag behind brightness maxima during the first extrema. Last maxima of brightness and area coincide in phase. Flare data are confronted with several unusual phenomena observed in the radio band.

E. Gurtovenko

[Abstracter's note: Complete translation]

Card 1/1

GUSEYNOV, R.E.

Applicability of the problem of a strong explosion to chromospheric flares. Astron.zhur. 38 no.5:869-876 S-O '61. (MIRA 14:9)

1. Shemakhinskaya astrofizicheskaya observatoriya AN Azerbaydzhanskoy SSR.

(Sun)

S/3019/62/002/000/0111/0124

ACCESSION NR: AT3012353

AUTHOR: Guseynov, R. E.

TITLE: Photometry, dynamics, and total energy of a chromospheric flare

SOURCE: Shemakha. Astrofizicheskaya observatoriya. Trudy*, v. 2, 1962, 111-124

TOPIC TAGS: solar flare, chromosphere, chromospheric flare, limb flare, corona, coronal flare

ABSTRACT: The article is devoted to a study of peculiarities in the time variation of the intensity, in conjunction with measurements of its dynamics and total energy, of the chromospheric flare observed on 26 August 1960 in the Shemakhinskaya astrofizicheskaya observatoriya (Shemakha Astrophysical Observatory) with the aid of chromosphere telescope equipped with an interference-polarization

ACCESSION NR: AT3012353

filter with a transmission band 0.5 Å operating in H_α radiation. Arguments are presented in favor of assuming that the supergravitational accelerations observed, which call for the application of a sudden force exceeding by many times not only gravitation but also the stationary electromagnetic forces produced in the field above the spot, are due to strong explosions concentrated in short regions. However, the shock wave propagation that would result from such an absorption is much lower than the observed velocity of motion of the leading front of the flare projection. To explain this discrepancy it is necessary to assume the collision of two plane shock waves, wherein a Mach wave is produced in the cavity between the fronts. If such a Mach wave is actually produced in the sun's atmosphere, then a study of this phenomenon in hydromagnetics will uncover very interesting possibilities for the explanation of many phenomena. "In conclusion I consider it my duty to thank A. G. Gasanalizade for participation in the observations and in the data

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ACCESSION NR: AT3012353

reduction. Orig. art. has: 8 figures, 6 formulas, and 2 tables.

ASSOCIATION: Shemakhinskaya astrofizicheskaya observatoriya (Shemakha Astrophysics Observatory)

SUBMITTED: 00 DATE ACQ: 21Nov63 ENCL: 00

SUB CODE: AS NO REF SOV: 012 OTHER: 000

Card 3/3

L 11187-63 EWT(1)/EWT(m)/FCC(w)/BDS/EEC-2/ES(v)--AFFTC/AFMDC/APGC/ASD/ESD-3--Pe-4/Pi-4/Po-4/Pq-4--AR/GW/K/PT-2 S/0033/63/040/003/0584/0586

84
82

ACCESSION NR: AP3001250

AUTHOR: Guseynov, R.E.

TITLE: On the possible applicability of the theory of the "luminous" electron to the mechanism of the generation of gamma-radiation emitted by chromospheric flares

SOURCE: Astronomicheskiy zhurnal, v. 40, no. 3, 1963, 584-586

TOPIC TAGS: sun, solar chromosphere, chromospheric flares, solar gamma-radiation, luminous-electron theory, Compton effect, relativistic electrons

ABSTRACT: This theoretical paper investigates the problem of the applicability of the theory of the "luminous" electron to the mechanism of generation of the gamma-radiation of chromospheric flares. Rocket investigations (Sky & Telescope, no. 5, 1957) and balloon investigations above Cuba (Peterson, L., Winckler, J.K., Phys. Rev. Letter, v. 1, 1958, 205) have indicated the presence of gamma-rays in chromospheric flares. A survey is proffered on the various theories on the generation of X-rays and gamma-rays. In particular, I.M. Gordon's theory (Astron. zh., v. 37, 1960, 934) is noted; according to it the gamma-radiation of chromospheric flares occurs upon two-photon annihilation of positrons that are formed

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L 11187-63
ACCESSION NR: AP3001250

from nuclear collisions of cosmic protons generated in the course of the chromospheric flares. The author postulates that the reverse (negative) Compton effect may be a possible source of gamma-radiation of chromospheric flares, if the concentration of electrons with an energy of appx. 10-sup-11 eV in the region of the flare with linear dimensions of appx. 10-sup-10cm will equal or exceed 10-sup-5 per cc, a configuration that appears little probable. It is postulated that the toroidal magnetic cells which, upon emergence at the solar surface, serve as the ultimate sources of the formation of chromospheric flares, may act as accelerators of relativistic electrons. On that premise the theory of the "luminous" electron is used to calculate the concentration of relativistic electrons that are required to yield the observed gamma-ray flux in the vicinity of the Earth's surface. If the linear dimension of the region of such electrons is appx. 10-sup-7 cm and the magnetic field strength H is appx. 500 gauss, the electron concentration should be appx. 10-sup-2 per cc with an electron energy of 10-sup-10 eV, and appx. 10-sup-4 per cc at 10-sup-9 eV, which appears to be entirely plausible.

ASSOCIATION: Shemakhinskaya astrofizicheskaya observatoriya (Shemakha Astrophysical Observatory)

Card 2/2

BIR

ACCESSION NR: AT4020996 S/3019/59/001/000/0053/0070

AUTHOR: Guseynov, R. E.

TITLE: Some observable data on the radio emission of the Sun and its interpretation. Theoretical relationship between the height above the photosphere and the relative intensity of radio splashes

SOURCE: Shemakha. Astrofiz. obser. Trudy*, V. 1, 1959. Trudy*Sektora astrofiziki (Transactions of the Astrophysics Sector), 53-70

TOPIC TAGS: radio emission, solar radio emission, sun, photosphere, radiotelescope, spectroheliogram, sunspot, black body radiation

ABSTRACT: The author leans heavily in this study on the work of Laffineur (Marius Laffineur. Dissertatsiya. Byurakanskaya astronomicheskaya observatoriya) on the radio telescopic observation of the Sun, which was of particular value because, along with information of a statistical nature, it contains data as yet derived by no one else. In addition to the measurement of radio splashes at wavelengths of 0.55 and 1.17 meters, Laffineur studied the eruptions responsible for the observed splashes, and obtained valuable spectroheliograms on a specific spectroheliograph. These experiments, particularly the heliograms, make it possible to follow the course of the perturbed areas of the solar

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ACCESSION NR: AT4020996

atmosphere at the time of radio splashes. The graphs, representing the variation of the splashes in a definite time interval, provide a means of determing the intensity of a radio splash in absolute units $\left(\frac{\text{watts}}{\text{m}^2 \cdot \text{cycle} \cdot \text{sec.}}\right)$. The author analyzes this material and arrives at the conclusion that the accompaniment of a sun spot by eruptions depends markedly on the intensity of the magnetic field of the spot: the greater the intensity, the greater the chances for the occurence of an eruption. The relation between sporadic radio radiation and chromospheric eruptions indicates that such eruptions may be one of the causes of sporadic emission. In certain of his previous works, the author has advanced the hypothesis that the immediate source of the radio emission of the Sun may be the relativistic electrons of the Sun, the cause of their acceleration being the electrical induction fields connected with the change (occasionally very acute) in the magnetic field of the spots. This theory is discussed and analyzed in some detail, and the author demonstrates that by properly varying the values of the relativistic electron energy and the intensity of the magnetic field one can explain not only the sporadic emissions, but also the chromospheric eruptions, as well as certain other occurrences. In the second part of the paper, in which the author takes up the problem of the theoretical relationship between the height above the photosphere and the relative intensity of the radio splashes, the following possible approaches to the problem are considered. In the first place, it may be assumed

ACCESSION NR: AT4020996

that the radio emission of the Sun and of its individual regions is subject to the law of radiation of an absolutely black body. This law, clearly, is not applicable for anomalously intensive splashes; however, in the most favorable hypothesis, it functions here as a certain formal measure for the testing or estimation of the radio-emissive capacity of individual perturbed regions of the solar atmosphere. In the second place, one may postulate that the theory of the "glowing" electron is applicable to the radio radiation of the sun, and, particularly, of its individual regions. Both approaches are considered in detail. Orig. art. has: 28 formulas, 4 figures and 5 tables.

ASSOCIATION: Astrofiz. observatoriya, Shemakha (Astrophysics Observatory)

SUBMITTED: 00 DATE ACQ: 07Apr64 ENCL: 00

SUB CODE: AS NO SOV REF: 003 OTHER: 003

Card 3/3

L 7641-65 EWT(1)/EWG(v)/EEC-4/EEC(t) Pe-5/Pq-4 GM
ACCESSION NR: AR5008866 S/0269/65/000/003/0048/0048

SOURCE: Ref. zh. Astronomiya. Otdel'nyy vypusk, 3.51.359

AUTHOR: Guseynov, R. E.

TITLE: The cause of the increase in the brightness of flocculae at the time of chromospheric flares

CITED SOURCE: Tr. Shemakhinsk. astrofiz. observ., v. 3, 1964, 5-11

TOPIC TAGS: sun, chromospheric flare, flocculus, solar activity, shock wave, solar atmosphere, solar radiation

TRANSLATION: The increase in brightness of a flocculus at the time of a flare can be attributed to the additional heating of the region of the flocculus caused by the process of development of the flare. In the process of the strong explosion, concentrated in a small region and causing the flare phenomenon, a shock wave develops, part of whose energy is expended on an increase in the density of radiation energy behind the front of the wave in the region around the flare. In this region, an intermediate process occurs whose manifestation is an increase in brightness of the flocculus. The author has computed the expenditure of shock wave energy on increasing the density of radiation energy in the region around the flare. If T_2 is the temperature behind the shock wave

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L 36641-65

ACCESION NR: AR5008866

front without taking into account the expenditure of its energy in the region around the flare and T_o is the corresponding temperature value with this expenditure taken into account, the ratio $T_o/T_2 \approx 0.16$ for moderately strong and ≈ 0.08 for strong flares. For weak flares $T_o/T_2 \approx 1$. This result is in agreement with observations which indicate that the appearance of weak flares in the area of flocculae is not accompanied by an increase in brightness of the latter. On the other hand, an estimate of the temperature on the periphery of the flare in accordance with the theory of a strong point explosion gives the value $\geq 10^5$ degrees for moderately large and large flares, which is improbable. This discrepancy can be understood if it is assumed that the temperature behind the shock wave front during its propagation in the solar atmosphere is decreased as a result of scattering into surrounding space. Bibliography of 8 items. E. Gurtovenko

SUB CODE: AA ENCL: 00

Card 2/2

SULTANOV, G.F.; GUSEYNOV, R.E.

Development of astronomical research in Azerbaijan. Izv. AN Azerb.SSR. Ser.fiz.-tekh.i mat. nauk no.3:43-51 '64.

(MIRA 17:12)

L 6932-66 EWT(1) GW

ACCESSION NR: AR5008866 S/0269/65/000/003/0048/0048

SOURCE: Ref. zh. Astronomiya. Otdel'nyy vypusk, 3.51.359

AUTHOR: Guseynov, R. K.

TITLE: The cause of the increase in the brightness of flocculae at the time of chromospheric flares

CITED SOURCE: Tr. Shemakhinsk. astrofiz. observ., v. 3, 1964, 5-11

TOPIC TAGS: sun, chromospheric flare, flocculus, solar activity, shock wave, solar atmosphere, solar radiation

TRANSLATION: The increase in brightness of a flocculus at the time of a flare can be attributed to the additional heating of the region of the flocculus caused by the process of development of the flare. In the process of the strong explosion, concentrated in a small region and causing the flare phenomenon, a shock wave develops, part of whose energy is expended on an increase in the density of radiation energy behind the front of the wave in the region around the flare. In this region, an intermediate process occurs whose manifestation is an increase in brightness of the flocculus. The author has computed the expenditure of shock wave energy on increasing the density of radiation energy in the region around the flare. If T_2 is the temperature behind the shock wave

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ACCESSION NR: AR5008866

front without taking into account the expenditure of its energy in the region around the flare and T_o is the corresponding temperature value with this expenditure taken into account, the ratio $T_o/T_2 \gtrsim 0.16$ for moderately strong and $\gtrsim 0.08$ for strong flares. For weak flares $T_o/T_2 \gtrsim 1$. This result is in agreement with observations which indicate that the appearance of weak flares in the area of flocculae is not accompanied by an increase in brightness of the latter. On the other hand, an estimate of the temperature on the periphery of the flare in accordance with the theory of a strong point explosion gives the value $\geq 10^5$ degrees for moderately large and large flares, which is improbable. This discrepancy can be understood if it is assumed that the temperature behind the shock wave front during its propagation in the solar atmosphere is decreased as a result of scattering into surrounding space. Bibliography of 8 items. E. Gurtovenko

SUB CODE: AA

ENCL: 00

Card 2/2 nd

L 11054-65 EWT(l)/EWG(v)/EEC-4/EEC(t) Pe-5/Pq-4/Pb-4 RAEM(a)/AFETR/AFWL/SSD/
ASD(p)-3/AEDC(a)/ESD(t)/SSD(b) GW

ACCESSION NR: AP4046260 S/0233/64/000/003/0121/0126

AUTHOR: Guseynov, R. F.

TITLE: Chromospheric flares as phenomena having an explosive character

SOURCE: AN AzerbSSR. Izvestiya. Seriya fiziko-tekhnicheskikh i matematicheskikh nauk, no. 3, 1964, 121-126

TOPIC TAGS: solar flare, explosive star, thermonuclear reaction, kinetic theory, radiation energy, Poisson ratio, thermal conductivity, boundary value problem

ABSTRACT: Although many observations have identified chromospheric flares as results of explosions occurring in the sun, it is impossible to compare such an explosion with, say, a thermonuclear explosion on earth, for various reasons which reduce essentially to the fact that the kinetic energy of the explosion is in itself in-

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sufficient to supply the energy dissipated by the flare in all forms of radiation. This means either that the strong explosion releases energy in a form other than kinetic, or else that the kinetic energy calculated by the usual theory of strong concentrated explosions is too low. Several effects accounting for this difference are discussed. One is the influence of magnetic fields and their configurations. A decisive role can also be played by thermal conductivity and radiation. The author has considered the problem of a strong point-like explosion under conditions of the solar atmosphere, (with a Poisson adiabat constant 5/3 and a probable value of the thermal conductivity coefficient), taking into account the thermal conductivity and radiation (for spherical symmetry and self-similar motion). The corresponding boundary problem was solved on a high-speed electronic computer at the computation center of the Academy of Sciences of the Azerbaydzhan SSR. The calculations yield an estimate of 9.4×10^7K for the temperature at the center of the explosion in the case of medium flares and 2.6×10^8K for strong flares.

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At such temperatures the light pressure should play a decisive role in the initial stage of propagation of the shock wave. The light pressure can also increase the temperature somewhat during the initial period following the explosion. A detailed report on this calculation will be published separately.

ASSOCIATION: None

SUBMITTED: 00 ENCL: 00

SUB CODE: AA NR REF SOV: 020 OTHER: 001

Card 3/3

L 42107-66 EWT(1) GM

ACC NR: AT6023359 SOURCE CODE: UR/3019/65/000/004/0021/0043

AUTHOR: Guseynov, R. E.

ORG: none

TITLE: Chromospheric flares and the problem of a powerful point-shaped burst, taking into consideration thermoconductivity, self-similar motion, and spherical symmetry

49
B+1

SOURCE: Shemakha. Astrofizicheskaya observatoriya. Soobshcheniya, no. 4, 1965. Fizika Solntsa (Physics of the sun), 21-43

TOPIC TAGS: chromosphere, solar flare, heat conductivity, differential equation system, gas dynamics

ABSTRACT: Photospheric and chromospheric observations carried out in Shemakha Astrophysical Observatory produced some important data on chromospheric flares. The development of supergravitational accelerations of matter with great strength in chromospheric flares during the inflammation phase indicates the possibility of a very strong burst concentrated in a small area. Very short duration of the beginning brightness phase in the flare may be considered as proof of a burst. The instantaneous change of intensity and the altitude above the limb make this phenomenon like a shock wave which is created by a powerful burst in a small area.

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The dynamic development of chromospheric flares may be classified into two groups. The first depends upon the logarithm of the linear ratio R/R_0 (R is the distance of the wave front from a fixed point and R_0 is the initial distance). The second is nonlinear with some loss in velocity. The angular coefficient K varies within the limits 0.5—2.0. The form of flare development cannot be explained as a nuclear burst. Guseynov considers chromospheric flares as phenomena like bursts depending upon magnetic configurations and thermoconductivity, which makes it possible to explain the logarithmic dependence of distances and variations of the angular coefficient. On the other hand, intermediate processes of interactions between relativistic electrons, atoms, and ions of flare matter may occur.

Guseynov discusses the problem of the possibility of applying the theory of a powerful point-shaped burst to chromospheric flares. The system of equations for unstable movement of nonviscous thermoconductive gases is used for theoretical solution of the problem

$$\left.\begin{aligned} &\rho\left(\frac{\partial v}{\partial t}+v\frac{\partial v}{\partial r}\right)+R\frac{\partial(\rho T)}{\partial r}=0,\\ &\frac{\partial \rho}{\partial t}+\frac{\partial(\rho v)}{\partial r}+\frac{2\rho v}{r}=0,\\ &\frac{\partial}{\partial t}\left[\rho r^2\left(\frac{v^2}{2}+\frac{RT}{\gamma-1}\right)\right]+\frac{\partial}{\partial r}r^2\left[\rho v\left(\frac{v^2}{2}+\right.\right.\\ &\left.\left.+\frac{RT}{\gamma-1}\right)+R\rho T v-x\frac{\partial T}{\partial r}\right]=0, \end{aligned}\right\} \quad (1)$$

where ρ is the density of the gas, v is the velocity, t is the time from the beginning of the burst, r is the coordinate of the shock wave, R is the gas constant, T is the absolute temperature, γ is the Poisson adiabatic index, and x is the coefficient of thermal conductivity determined exponentially by the absolute temperature. The first equation of the system expresses pulses, the second—the continuity, and the third—the influx of heat.

The following boundary conditions determine the possibility of interruptions:

$$\left.\begin{aligned}
&\rho_1 (c-v_1) = \rho_2 (c-v_2),\\
&\rho_1 (c-v_1)^2 + R\rho_1 T_1 = \rho_2 (c-v_2)^2 + R\rho_2 T_2,\\
&\rho_1 (c-v_1)\left(\frac{v_1^2}{2} + \frac{RT_1}{\gamma-1}\right) - R\rho_1 T_1 v_1 +\\
&+ x_1 T_1^2 \left(\frac{\partial T}{\partial r}\right)_1 = \rho_2 (c-v)\left(\frac{v_2^2}{2} + \frac{RT_2}{\gamma-1}\right) -\\
&- R\rho_2 T_2 v_2 + x_2 T_2^2 \left(\frac{\partial T}{\partial r}\right)_2,
\end{aligned}\right\} \quad (2)$$

where c is the velocity of the shock wave. The subscript 1 relates to the moment before the interruption and subscript 2 to the moment after the front of interruption. Assigning various values to v_1, v_2, T_1, T_2, x_1T_1, and x_2T_2,

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the problem can be solved under various conditions. The problem becomes a general one if the initial density depends upon the initial coordinates and the thermoconductivity is taken into consideration. In this case the solution is very complicated. The problem can be easily solved when the thermoconductivity is neglected. The overall analysis of the theoretical approach to the problem showed that a rational solution can be obtained only when the coefficient of the thermoconductivity is appropriately chosen for the given solar conditions. The temperature in the center of the interruption also plays an important role and depends upon the velocity of the shockwave and the Poisson adiabatic index. The dependence of the temperature upon the time is computed and represented graphically in Fig. 1, which shows the rapid decrease of temperature with time.

The dependence of the speed of the gas in a powerful flare is computed and represented graphically in Fig. 2. Graphs in the original article characterizing the temperature and velocity changes are drawn from data based only on thermoconductivity. In the solar atmosphere, there are complicated processes associated, except for the powerful burst, with interactions between the plasma, the magnetic field, and different kinds of particles. These processes can prolong duration of flares, which depends upon the temperature of the layer of the solar atmosphere: The higher the temperature of the layer, the longer the flare lasts.

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ACC NR: AT6023359

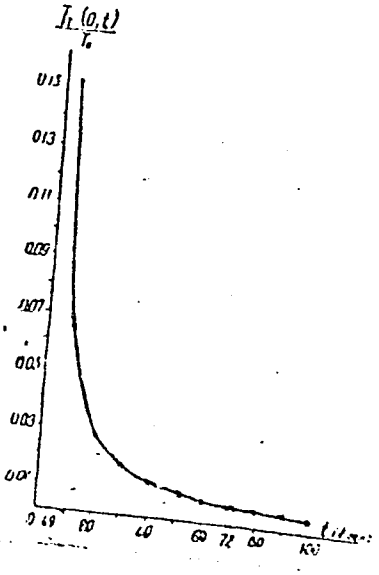

Fig. 1. The temperature function is shown on the ordinate and the time in seconds on the abscissa

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ACC NR: AT6023359

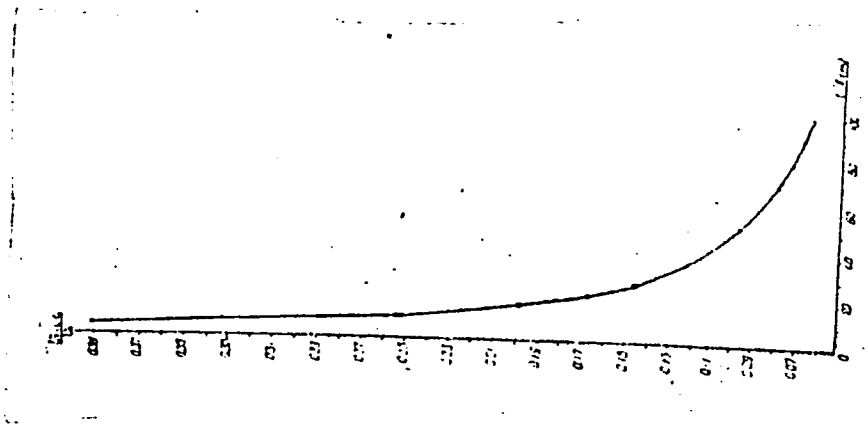

Fig. 2. The function of the velocity is given on the ordinate and the time in seconds on the abscissa

Orig. art. has: 9 figures, 4 tables and 6 formulas. [ATD PRESS: 5038-F]

SUB CODE: 03 / SUBM DATE: none / ORIG REF: 026

Card 6/6 af

L 08921-67 EWT(1) GW

ACC NR: AR6025353 SOURCE CODE: UR/0269/66/000/004/0065/0065

AUTHOR: Guseynov, R. E.

TITLE: Doppler effect in the widening of the spectral lines of chromospheric flares

SOURCE: Ref. zh. Astronomiya, Abs. 4.51.491

REF SOURCE: Solnechnyye dannyye, no. 5, 1965, 54-57

TOPIC TAGS: sun, solar chromosphere, ~~chromospheric~~ solar flare, ~~spectral line~~ Doppler effect, solar radiation, solar spectrum

ABSTRACT: Using the methodology described in Part I of the paper (see Ref. zh. Astr. 1966, 2.51.457), the mechanism of emission lines widening in the flare rated 1+ of 21 August 1959 is investigated; the flare consists of three separating nodes and is quite dissimilar from the flare studied in part I of the paper. The basic results are: the lines are widened by the Doppler effect; the nature of difference of the turbulent (characteristic) velocities developed for the lines of the various elements is the same as in the previous flare; the characteristic velocities are, on the whole, lower than in the powerful, earlier investigated flare (characteristic velocities may be flare power indicators); distinct nodes are found to have different turbulent velocities, and this permits to consider them as irrelative flares. [Translation of abstract]

SUB CODE: 03, 20

UDC 523.77

Card 1/1

L 10904-67 EWT(1) GW

ACC NR: AR6034900 SOURCE CODE: UR/0269/66/000/008/0054/0054 24

AUTHOR: Guseynov, R. E.

TITLE: Chromopheric flares and the problem of a strong point explosion taking into consideration heat conductivity during self-similar movement and with spherical symmetry

SOURCE: Ref. zh. Astronomiya, Abs. 8.51.437

REF SOURCE: Soobshch. Shemakhinsk. astrofiz. observ. vyp. 4, 1965, 21-43

TOPIC TAGS: chromosphere, solar flare, electronic computer, heat conductivity

ABSTRACT: The possibility is studied of considering chromospheric flares as strong explosions which maintaining self-similarity of movement and spherical symmetry. A term which takes heat conductivity into consideration is introduced into the equation. Certain accepted assumptions allow solution of the problem, with the use of a computer. The author is of the opinion that obtaining of a smooth solution may be considered as an argument in favor of the application to chromospheric flares of the problem of a strong explosion which takes heat conductivity into account.

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L 10904-67

ACC NR: AR6034900

provided self-similarity and spherical symmetry exist. The bibliography has 26 references. [Translation of abstract]

SUB CODE: 03, 09/

Card 2/2

ACC NR: AP7001508 SOURCE CODE: UR/0033/66/043/006/1159/1167

AUTHOR: Guseynov, R. E.

ORG: Shemakha Astrophysical Observatory, Academy of Sciences, AzerbSSR (Shemakhinskaya astrofizicheskaya observatoriya, Akademii nauk AzerSSR)

TITLE: The type of motion and asymmetry of emission lines in chromospheric flares

SOURCE: Astronomicheskiy zhurnal, v. 43, no. 6, 1966, 1159-1167

TOPIC TAGS: chromospheric flare, chromosphere, Doppler effect, stark effect, solar flare, Balmer series

ABSTRACT: It is found that broadening of spectral lines of chromospheric flares is caused by the Doppler effect, due to macroscopic motions in regions of emission. For the hydrogen lines of the Balmer series, up to H_ε, this effect is the only type of mechanism responsible for broadening. The broadening of higher terms of the Balmer series is due to the combined action of the Stark and Doppler effects. The higher the turbulent velocity, the greater is the Doppler effect. The turbulent velocity of macroscopic motions is largest for hydrogen and smallest for the metals. The calcium ions occupy an intermediate position, which indicates different regions of emission. It is shown that Ellison's hypothesis on the possibility of appearance of asymmetry

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ACC NR: AP7001508

in line profiles of flare spectra as a result of absorption of radiation in moving clouds above a flare is incorrect. The cause for asymmetry is probably associated with the presence of a flow of comparatively small clots in the flare region with mean velocity directed either towards or away from the solar surface. The additional radiation of these clots, superimposed on the corresponding wing, leads to asymmetry. The presence of a velocity gradient during definite phases of flare development is established. The relative velocity of the flow of small clots is estimated; higher velocity corresponds to greater asymmetry. Orig. art. has: 8 formulas, 5 tables, and 3 figures.

SUB CODE: 03/ SUBM DATE: 27Dec65/ ORIG REF: 010/ OTH REF: 007

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ACC NR: AP7013734

SOURCE CODE: UR/0233/66/000/004/0096/0103

AUTHOR: Guseynov, R. E.

ORG: none

TITLE: Results of spectrophotometric investigation of the chromospheric flare of 25 June 1960. II

SOURCE: AN AzerbSSR. Izvestiya. Seriya fiziko-tekhnicheskikh i matematicheskikh nauk, no. 4, 1966, 96-103

TOPIC TAGS: chromosphere, solar atmosphere, solar flare, spectrophotometry

SUB CODE: 03

ABSTRACT: This is a continuation of an earlier paper dealing exclusively with the chromospheric flare of 25 June 1960 (see R. E. Guseynov, Izv. AN Azerb. SSR, Seriya Fiz.-Tekhn. i Matem. Nauk, No. 3, 1966). It was found that atoms and ions of different elements are excited in different regions of a lare and also the maxima of luminescence in the lines of equal atoms and ions set in nonsimultaneously. The maximum of luminescence in the lines of helium and hydrogen, in whose emission regions the turbulent velocities are greater than in other regions of a flare, sets in earlier than others, but the maximum of luminescence in the lines MgI,

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ACC NR: AP7013734

AlI, FeI, TiI and other atoms of metals, with a minimum turbulent velocity in the region of emission, ets in with some lag. The optical thickness, even in the central part of the $H\alpha$ line, is small, which can be attributed, in particular, to the small number of hydrogen atoms in the second quantum state and the important role of turbulence. This is evidence that the flare in actuality is a structural formation in whose different elements the exciting factor operates with different force. A shock wave may be the exciting factor. The optical thickness of the flare in the H and K lines is small and it changes appreciably from frame to frame and from one part of a condensation to another. This and data on the character of asymmetry in the H and K lines once again confirms that the solar atmosphere in actuality is extremely nonhomogeneous and leads to extreme variety and complexity in the emission pattern. Facts discovered from the helium lines and the results obtained from the hydrogen lines and H and K lines are evidence that flares in actuality are explosions and as a result individual condensations or clouds depart from the region of the explosion with a rather high velocity and interact with the nonuniform plasma of the solar atmosphere. Orig. art. has: 3 figures and 3 tables. [JPRS: 39,945]

Card 2/2

KULIYEV, I.P.; GUSEYNOVA, A.A.

Organizing field studies of mechanical properties of rocks. Azerb. neft. khoz. 38 no.5:17-18 My '59. (MIRA 12:9)

(Rocks--Testing)

ALIYEV, F.S.; GUSEYNOVA, A.A.

Characteristics of soils in the submerged part of the Lok-Batan fold from the point of view of engineering geology. Azerb. neft. khoz. 38 no.6:7-9 Je '59. (MIRA 12:10)
(Lok-Batan region--Petroleum in submerged lands)

ALIYEV, F.S.; GUSEYNOVA, A.A.

Characteristics of bottom soils of the Caspian Sea southwest of the Neftyanye Kamni region from the point of view of engineering geology. Azerb.neft.khoz. 39 no.9:10-12 S'60. (MIRA 13:10)

(Caspian Sea--Ocean bottom)

SULEYMANOV, D.M.; ALIYEV, F.S.; GUSEYNOVA, A.A.

Lithology and physicomechanical properties of bottom sediments in the Neftyanye Kamni field. Izv. AN Azerb. SSR. Ser. geol.-geog. nauk no.4:63-70 '60. (MIRA 14:1)
(Neftyanye Kamni region--Deep-sea deposits)

ALIYEV, F.S.; GUSEYNOVA, A.A.

Features of Khvalynian clays from the Oblivnoy Island area of the bottom of the Caspian Sea in connection with the conditions of their formation from the point of view of engineering geology. Dokl. AN Azerb. SSR 19 no.3:41-45 '63. (MIRA 17:8)

1. Institut geologii AN AzSSR. Predstavleno akademikom AN AzSSR Sh.F. Mekhtiyevym.

GASANOVA, D.M.; GUSEYNOVA, A.A.

Results of an interdepartmental conference on problems of electrochemical stabilization of silty foundation beds for marine hydraulic structures. Osn., fund. i mekh. grun. 6 no.3:30-31 '64 (MIRA 17:7)